Name _____

Review Problems Unit #11 – Coulomb's Law, Electric Potential Difference and Magnetic Forces

1. Anthea rubs two latex balloons against her hair causing the balloons to each become charged negatively with 2.0 X 10^{-6} C. She holds them 0.70 meters apart. What is the electric force between the two balloons? (0.073 N)

2. Bonnie is dusting the house and raises a cloud of dust particles as she wipes across the table. If two 4.0 X 10^{-14} C pieces of dust exert an electrostatic force of 2.0 X 10^{-12} N on each other how far apart are the dust particles at that time? (2.7 X 10^{-3} m)

3. As Courtney switches on the TV set to watch her favorite show the electron beam in the TV tube is steered across the screen by fields between two charged plates. If the electron experiences a force of 3.0 X 10^{-6} N. How large is the field between the deflection plates?(1.9 x 10^{13} N/C)

4. A 9.0 V battery does 1.0 X 10^{3} J of work transferring charge. How much charge is transferred? (1.1X10^{2} C)

5. The electric field intensity between two charged plates is 2.8 X 104 N/C. The plates are .0640 m apart. What is the potential difference between the plates in volts? (1.79 X 10^{3} V)

Force on Current Carrying Wire/Charge

1. A 3.0 cm wire carries a 4.0 A current. The wire is placed at right angles to a magnetic field of induction 0.12 T (N/A x m). How much force acts on the wire? (1.4 x 10^{-2}N)

2. A 20.0 cm wire weigh 5.0 x 10^{-3} N. The wire, carrying 0.10 A, remains suspended when placed perpendicular to a magnetic field. Calculate the strength of the magnetic field. (2.5 X 10^{-1} T)

3. A force of 4.0 x 10^{-14}N acts on a stream of protons which is perpendicular to a magnetic field of induction 0.50 T. Calculate the velocity of the protons. (5.0 m/s) (typo)

x10^{5}